

Practice Question-8

CLASS and OBJECTS

```
package handson;
public class Oops
{
    String name;
    String breed;
    int age;
    String color;
    public Oops(String name, String breed, int age, String color)
    {
        this.name = name;
        this.breed = breed;
        this.age = age;
        this.color = color;
    }
    public String getName()
    {
        return name;
    }
    public String getBreed()
    {
        return breed;
    }
    public int getAge()
    {
        return age;
    }
    public String getColor()
    {
        return color;
    }
    @Override
    public String toString()
    {
        return("Hi my name is "+ this.getName()+ ".\nMy breed,age and color are
" + this.getBreed()+" , " + this.getAge()+ " , and"+ this.getColor() + ".");
    }
    public static void main(String[] args)
    {
        Oops scott = new Oops("Scott","papillon", 5, "black");
        System.out.println(scott.toString());
    }
}
```

```
pse IDE
File Edit Run Window Help
[Icons]
Oops.java x
1 package handson;
2
3 public class Oops
4 {
5     String name;
6     String breed;
7     int age;
8     String color;
9     public Oops(String name, String breed, int age, String color)
10    {
11        this.name = name;
12        this.breed = breed;
13        this.age = age;
14        this.color = color;
15    }
16    public String getName()
17    {
18        return name;
19    }
20    public String getBreed()
21    {
22        return breed;
23    }
24    public int getAge()
25    {
26        return age;
27    }

```

Problems @ Javadoc Declaration Console x

```
<terminated> Oops [Java Application] C:\Users\Swaroop\p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32
Hi my name is Scott.
My breed,age and color are papillon, 5, andblack.
```

POLYMORPHSIM

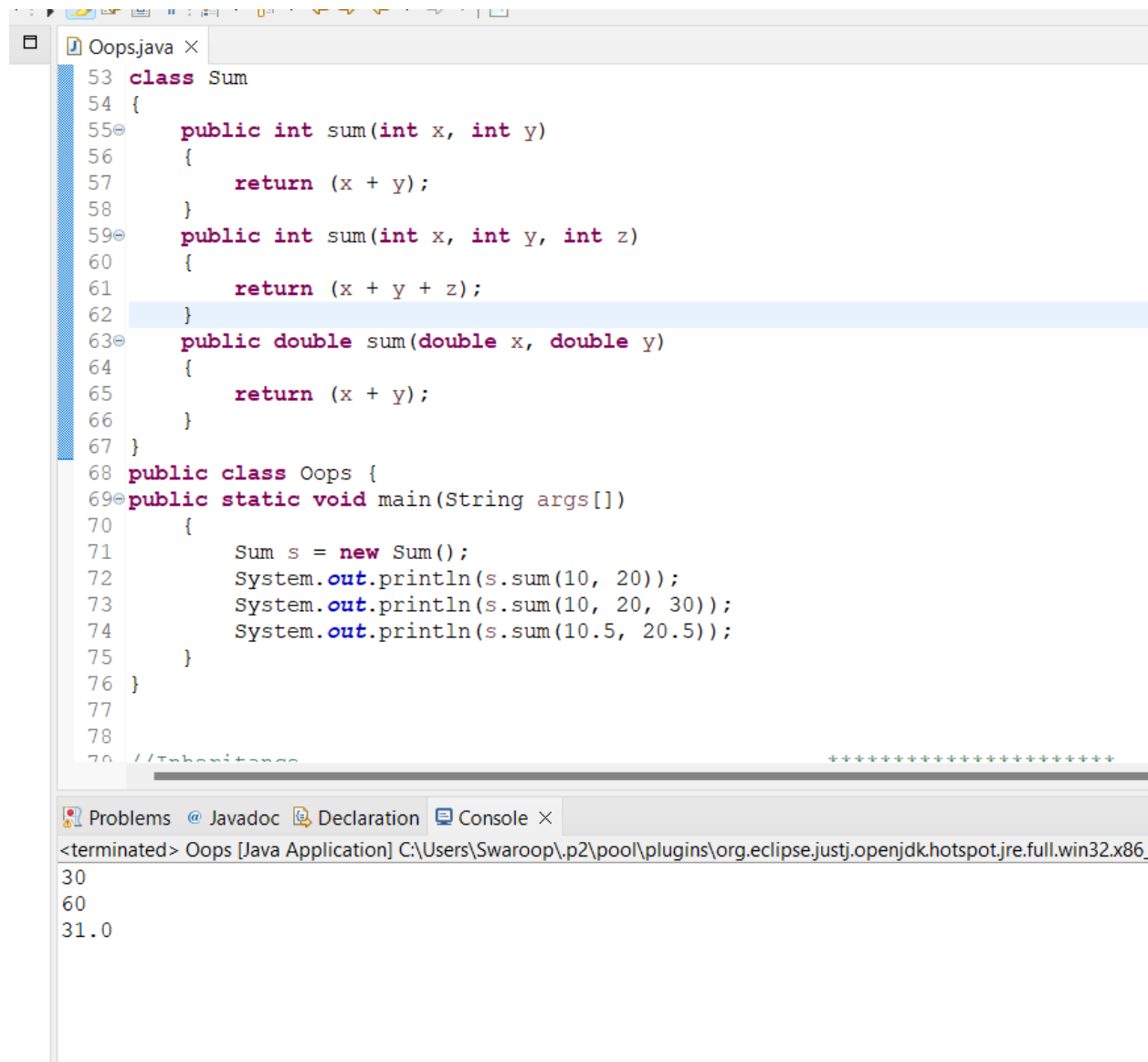
```
class Sum
{
    public int sum(int x, int y)
    {
        return (x + y);
    }
    public int sum(int x, int y, int z)
    {
        return (x + y + z);
    }
}
```

```

    public double sum(double x, double y)
    {
        return (x + y);
    }
}

public class Oops {
    public static void main(String args[])
    {
        Sum s = new Sum();
        System.out.println(s.sum(10, 20));
        System.out.println(s.sum(10, 20, 30));
        System.out.println(s.sum(10.5, 20.5));
    }
}

```



The screenshot shows the Eclipse IDE with a file named 'Oops.java' open. The code in the editor is as follows:

```

53 class Sum
54 {
55     public int sum(int x, int y)
56     {
57         return (x + y);
58     }
59     public int sum(int x, int y, int z)
60     {
61         return (x + y + z);
62     }
63     public double sum(double x, double y)
64     {
65         return (x + y);
66     }
67 }
68 public class Oops {
69     public static void main(String args[])
70     {
71         Sum s = new Sum();
72         System.out.println(s.sum(10, 20));
73         System.out.println(s.sum(10, 20, 30));
74         System.out.println(s.sum(10.5, 20.5));
75     }
76 }
77
78
79 // Terminator *****

```

The console output at the bottom shows the results of the program execution:

```

<terminated> Oops [Java Application] C:\Users\Swaroop\p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_
30
60
31.0

```

INHERITANCE

```
package handson;
class Bicycle
{
    public int gear;
    public int speed;
    public Bicycle(int gear, int speed)
    {
        this.gear = gear;
        this.speed = speed;
    }
    public void applyBrake(int decrement)
    {
        speed -= decrement;
    }
    public void speedUp(int increment)
    {
        speed += increment;
    }
    public String toString()
    {
        return("No of gears are " + gear + "\n" + "speed of bicycle is " +
speed);
    }
}
package handson;
class MountainBike extends Bicycle
{
    public int seatHeight;
    public MountainBike(int gear,int speed,int startHeight)
    {
        super(gear, speed);
        seatHeight = startHeight;
    }
    public void setHeight(int newValue)
    {
        seatHeight = newValue;
    }
    @Override
    public String toString()
    {
        return (super.toString()+
"\nseat height is "+seatHeight);
    }
}
public class Oops
{
    public static void main(String args[])
    {
```

```
        MountainBike mb = new MountainBike(3, 100, 25);
        System.out.println(mb.toString());
    }
}

//
78
79 //Inheritance -----*****
80
81 public class Oops
82 {
83     public static void main(String args[])
84     {
85         MountainBike mb = new MountainBike(3, 100, 25);
86         System.out.println(mb.toString());
87     }
88 }
89
90
91
```

Problems @ Javadoc Declaration Console ×

<terminated> Oops [Java Application] C:\Users\Swaroop.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.7.v20

No of gears are 3
speed of bicycle is 100
seat height is 25

ENCAPSULATION

```
public class Oops
{
    private String Name;
    private int Roll;
    private int Age;
    public int getAge()
    {
        return Age;
    }
    public String getName()
    {
        return Name;
    }
    public int getRoll()
    {
        return Roll;
    }
    public void setAge( int newAge)
    {
        Age = newAge;
    }
    public void setName(String newName)
    {
```

```

        Name = newName;
    }
    public void setRoll( int newRoll)
    {
        Roll = newRoll;
    }
}
public class Oops
{
    public static void main (String[] args)
    {
        Encapsulate obj = new Encapsulate();
        obj.setName("Harsh");
        obj.setAge(19);
        obj.setRoll(51);
        System.out.println("My name: " + obj.getName());
        System.out.println("My age: " + obj.getAge());
        System.out.println("My roll: " + obj.getRoll());
    }
}

```

ABSTRACTION

```

abstract class Shape
{
    String color;
    abstract double area();
    public abstract String toString();
    public Shape(String color)
    {
        System.out.println("Shape constructor called");
        this.color = color;
    }
    public String getColor()
    {
        return color;
    }
}
class Circle extends Shape
{
    double radius;
    public Circle(String color, double radius)
    {
        super(color);
        System.out.println("Circle constructor called");
        this.radius = radius;
    }
}

```

```

@Override
double area()
{
    return Math.PI * Math.pow(radius, 2);
}
@Override
public String toString()
{
    return "Circle color is " + super.color + "and area is : " + area();
}
}
class Rectangle extends Shape
{
    double length;
    double width;
    public Rectangle(String color, double length, double width)
    {
        super(color);
        System.out.println("Rectangle constructor called");
        this.length = length;
        this.width = width;
    }
    @Override
    double area()
    {
        return length*width;
    }
    @Override
    public String toString()
    {
        return "Rectangle color is " + super.color +
            "and area is : " + area();
    }
}
public class Oops
{
    public static void main(String[] args)
    {
        Shape s1 = new Circle("Red", 2.2);
        Shape s2 = new Rectangle("Yellow", 2, 4);
        System.out.println(s1.toString());
        System.out.println(s2.toString());
    }
}

```

```

146
147 //Abstraction
148 abstract class Shape
149 {
150     String color;
151     abstract double area();
152     public abstract String toString();
153     public Shape(String color)
154     {
155         System.out.println("Shape constructor called");
156         this.color = color;
157     }
158     public String getColor()
159     {
160         return color;
161     }
162 }
163 class Circle extends Shape
164 {
165     double radius;
166     public Circle(String color, double radius)
167     {
168         super(color);
169         System.out.println("Circle constructor called");
170         this.radius = radius;
171     }

```

Problems @ Javadoc Declaration Console ×

```

<terminated> Oops [Java Application] C:\Users\Swaroop\p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full\
Shape constructor called
Circle constructor called
Shape constructor called
Rectangle constructor called
Circle color is Redand area is : 15.205308443374602
Rectangle color is Yellowand area is : 8.0

```